

Supporting Documentation for the Consumption, Emissions, and Tree Mortality Modules (IFT-FOFEM)

Name of Software Tool: Consumption, emissions, and tree mortality modules (IFT-FOFEM).

Current Version Description/Date: FOFEM 5.7, September 2009.

Software Code and History: The software code for the FOFEM consumption, emissions, and tree mortality modules was acquired from the U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program in 2009.

Software Developer(s) Names, Organization, and Contact Information: U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program.

Note to Users: For questions specifically relating to the internal functional operations of this module, contact the developer(s) or help desk resources for this software tool. For questions regarding how this tool is used within IFTDSS, please contact the IFTDSS Team using the Feedback function available on every page of IFTDSS.

Science Model Contact, Names, Organization, and Contact Information: U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program; Elizabeth Reinhardt, Research Forester; [Robert Keane](#), Research Ecologist.

Availability of the version of record: The latest version of the software code for these modules resides with the U.S. Forest Service, Rocky Mountain Research Station, Fire, Fuel, and Smoke Science Program.

Primary Funding Sources: U.S. Forest Service (Rocky Mountain Research Station) and the Joint Fire Sciences Program under program

Application Purpose (General): The consumption, emissions, and tree mortality modules can be used to predict fuel consumption, smoke production, and tree mortality caused by prescribed fire or wildfire. In order to calculate consumption and emissions, cover type, fuel loading, and moisture information are needed. The output variables include amount of fuel consumed during fire, post-burn fuel loading, emissions released during flaming and smoldering combustion, and total flaming and smoldering time. In order to calculate tree mortality, tree species, stand characteristics, and fire behavior information are needed. The output variables include percent mortality, stand basal area pre- and post-fire, and stand canopy cover pre- and post-fire.

Application Purpose (Fuel Treatment): The consumption, emissions, and tree mortality modules in IFTDSS are used to help identify areas of the landscape where expected fire effects are potentially within or outside of acceptable levels. The information provided by the modules indicates where fuel treatments may be warranted.

User/Application Documentation:

- <http://www.firemodels.org/index.php/national-systems/flammap>
- <http://www.firemodels.org/index.php/flammap-introduction/flammap-publications>
- **User Application Guidance:** Can be found at: <http://www.firelab.org/science-applications/fire-fuel/111-fofem>

Scientific Foundations of the Software Tool:

- Degree of validation/evaluation and availability of written results:
 - No information available at this time.
- Publication history:
 - Peer reviewed publications
 - No information available at this time.
 - Non-peer reviewed publications
 - Reinhardt, Elizabeth. Using FOFEM 5.0 to estimate tree mortality, fuel consumption, smoke production, and soil heating from wildland fire. 7 p
(<http://www.fire.org/downloads/fofem/5.2/FOFEM5Using.pdf>)

Training Availability: Can be found at <http://www.firelab.org/science-applications/fire-fuel/111-fofem>.